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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,016	05/05/2005	Masahiro Inui	050274	3369
23850 7590 11/17/2008 KRATZ, QUINTOS & HANSON, LLP 1420 K Street, N.W. Suite 400 WASHINGTON, DC 20005				
EXAMINER				
LEO, LEONARD R				
ART UNIT		PAPER NUMBER		
3744				
MAIL DATE		DELIVERY MODE		
11/17/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/534,016

**Applicant(s)**

INUI ET AL.

**Examiner**

Leonard R. Leo

**Art Unit**

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 4/08, 8/08
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

## Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 21, 2008 has been entered.

### *Claim Rejections - 35 USC § 102*

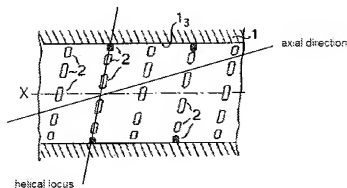
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Inui et al (9-243283). Figure 9 (below) of Inui et al discloses a tube 1 having an inner surface with a plurality of elongated fins 2 extending along a helical loci, and regions with no fins present over an entire axial length.

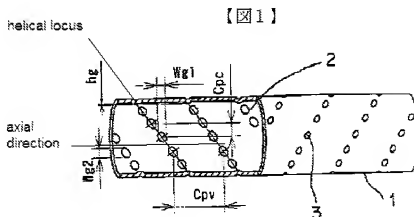
【图9】



Regarding claim 2, as permissibly gleaned from Figure 9, the helical angle of the fins 2 is about 60 degrees with respect to the axial direction.

Regarding claim 4, Figure 10 of Inui et al discloses powder body plasma arc welding the fins.

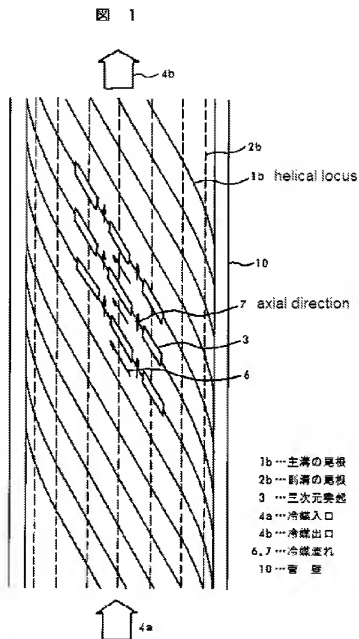
Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakai (2002-107081). Figure 1 (below) of Nakai discloses a tube 1 having an inner surface with a plurality of elongated fins 2 extending along a helical loci, and regions with no fins present over an entire axial length.



Regarding claim 2, as permissibly gleaned from Figure 1, the helical angle of the fins 2 is about 55 degrees with respect to the axial direction.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al (8-178574). Figure 1 (next page) of Nakai discloses a tube 10 having an inner surface with a plurality of elongated fins 3 extending along a helical loci, and regions with no fins present over an entire axial length.

【図 1】



Regarding claim 2, as permissibly gleaned from Figure 1, the helical angle of the fins 3 is about 30 degrees with respect to the axial direction.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inui et al.,  
Inui et al discloses all the claimed limitations except the ratio of TW/C.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a desired TW/C ratio, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Clearly, the ratio of TW/C is dependent upon the tube inner diameter (paragraph 6, 30 to 150 mm), inclination angle (i.e. about 50, as permissibly gleaned), fin pitch (paragraph 6, 3 to 100 mm) and fin length (paragraph 6, 1 to 50 mm). A larger ratio would provide an increase in pressure drop and heat exchange, while a lower ratio would provide a decrease in pressure drop and heat exchange. Thus, one of ordinary skill in the art would employ any combination of the variables above to achieve a desired pressure drop and heat exchange.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (8-178574) in view of Inui et al (9-243283).

Ito et al ('574) discloses all the claimed limitations except weld beads.

Inui et al ('283) (Figure 11) discloses a tube comprising a plurality of fins 2 formed by powder body plasma arc welding for the purpose of ease of manufacture.

Since Ito et al ('574) and Inui et al ('283) are both from the same field of endeavor and/or analogous art, the purpose disclosed by Inui et al ('283) would have been recognized in the pertinent art of Ito et al ('574).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Ito et al ('574) fins formed by powder body plasma arc welding for the purpose of ease of manufacture as recognized by Inui et al ('283).

#### ***Response to Arguments***

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. As noted in the rejection in view of Inui et al above, the axial direction is not necessarily the central axis direction.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ LEONARD R. LEO /  
PRIMARY EXAMINER  
ART UNIT 3744

November 17, 2008